

**WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY**  
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**JULY 2007 REPORT**

Note to Readers: Pages 1-12 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 13.

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## **Item 1. Tougher Law of the Sea Regulations Suggested for Marine Genetic Resources**

The UN Open-ended Informal Consultation Process on Oceans and the Law of the Sea produced some recommendations for improving the management and protection of marine genetic resources, including designing enforceable regulations along with liabilities and responsibilities related to marine genetic resources; increasing protection of the marine environment from the effects of man-made factors; and encouraging collaborative research, access and use of marine resources in areas beyond national jurisdiction. Although the UN Convention on the Law of the Sea is recognized as the legal framework for all activities in the oceans and seas, there is disagreement on how the Convention applies to marine genetic resources in areas outside national jurisdictions. The G-77 group of developing countries and China consider marine genetic resources “common heritage of mankind”; while Japan, the U.S. and some other developed countries argue that they fall under the provisions relating to the high seas. The debate will continue in 2008 at the UN Ad Hoc Open-ended Informal Working Group on issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction.

### **Military Implications:**

Although the United States is not Party to the Law of the Sea, it would be wise to keep track of these suggestions and comply where possible, for good stewardship and in case the U.S. does join at a later stage.

### **Sources:**

United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea

[http://www.un.org/Depts/los/consultative\\_process/consultative\\_process.htm](http://www.un.org/Depts/los/consultative_process/consultative_process.htm)

States Reach Partial Agreement on Marine Genetic Resources at UN Talks

<http://www.newsletterarchive.org/2007/06/30/180929-STATES+REACH+PARTIAL+AGREEMENT+ON+MARINE+GENETIC+RESOURCES+AT+UN+TALKS>

Countries Address Marine Genetic Resources at UN Talks

<http://www.un.org/apps/news/story.asp?NewsID=23037&Cr=Law&Cr1=Sea>

Uncertainty Hindering Management of Marine Genetic Resources, UN Meeting Told

<http://www.un.org/apps/news/story.asp?NewsID=23072&Cr=law&Cr1=sea>

## **Item 2. New Policies for Addressing Climate Change**

### **2.1 Corporate CEOs Pledge Actions on Climate Change at UN Global Compact Summit**

More than 150 CEOs signed the “Caring for Climate” platform at the UN Global Compact Summit held in Geneva July 5-7, including 30 from the Fortune Global 500. The pledge called for companies to reduce their carbon emissions and meet energy-efficiency targets, and called on governments to establish post-Kyoto market mechanisms to reduce greenhouse gas emissions.

### **Military implications:**

The Global Compact list of corporations should be reviewed to see which ones are military contractors. Those who are could be invited to help implement the Army Strategy on the Environment. Those military contractors who are not yet members, but who are involved in sustainability initiatives with the military might be encouraged to join the Global Compact to further their sustainability capacity. About 4,000 private companies, trade unions, and NGOs from

116 countries have subscribed to the Global Compact's ten universal principles relating to human rights, labor rights, the environment and the struggle against corruption.

**Sources:**

Companies pledge at U.N. to cut carbon burdens

<http://www.reuters.com/article/ousiv/idUSL0654572920070706>

Participants Pledge to Pursue More Sustainable, Inclusive Economy

<http://www.un.org/News/Press/docs/2007/eco119.doc.htm>

Caring For Climate: The Business Leadership Platform (text of the statement)

[http://www.unglobalcompact.com/docs/issues\\_doc/Environment/CaringforClimate\\_27June.pdf](http://www.unglobalcompact.com/docs/issues_doc/Environment/CaringforClimate_27June.pdf)

Companies Commit to Reducing Climate Risks

<http://www.worldwatch.org/node/5194>

## **2.2 Regional Initiatives for Climate Change**

### 2.2.1 EU Climate Change Policy

The European Commission launched a six-month public debate on approaches for adapting to climate change. Citizens, Parliaments, Member States and international partners will contribute views along the lines set by the Green Paper "Adapting to Climate Change in Europe - Options for EU Action" launched in June 2007 [see last month's report item on Climate Change]. The results, available at the beginning of 2008, will be considered in policymaking and setting priorities for developing a EU adaptation strategy by the end of 2008.

Meantime, UK Foreign Secretary, David Miliband, listed climate change among the UK Foreign Office's ten 'strategic priorities', on a par with consequences of extremism, radicalization, and conflict. He noted that climate change might become the "new raison d'être" for the EU, as "one of the greatest threats to our future prosperity and security... Creating an Environmental Union is as big a challenge in the 21<sup>st</sup> century as peace in Europe was in the 1950s" he said.

### 2.2.2 Asia-Pacific to Increase Responses to Climate Change

Anticipating that Asia and the Pacific could be one of the regions most severely affected by climate change, a two-day meeting organized by the UN and other international agencies focused on identifying strategies, business models, and financial frameworks to reduce the impact of climate changes and promote clean energy while pursuing economic growth. Recommendations were made by government policymakers, business leaders, academics, and representatives of NGOs from across the region. Meanwhile, Australia's opposition Labor Party announced that it would give its poorer neighbors \$US132 million to address impacts of climate change.

### **Military implications:**

Relevant military personnel stationed in these regions should seek opportunities to collaborate with regional leaders in implementing the Army Strategy on the Environment.

**Sources:**

Adaptation to climate change: it may be a matter of survival! Stavros Dimas, Member of the European Commission, responsible for environment

<http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/457&format=HTML&aged=0&language=EN&guiLanguage=en>

Climate change: Europe must take adaptation measures to lessen impacts of current and future warming  
<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/979&format=HTML&aged=0&language=EN&guiLanguage=en>

Adapting to Climate Change –Launching a public debate on options for EU Action

<http://ec.europa.eu/environment/climat/pdf/eccp/adapting.pdf>

New Diplomacy: Challenges for Foreign Policy (Rt Hon David Miliband MP, Foreign Secretary)

<http://www.fco.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1007029391647&a=KArticle&aid=1184751108322>

Asian-Pacific countries discuss responses to climate change at UN-backed meeting

<http://www.un.org/apps/news/story.asp?NewsID=23270&Cr=climate&Cr1=change>

Asia-Pacific Examines Ways to Scale Up Responses to Climate Change

<http://www.unescap.org/unis/press/2007/jul/g29.asp>

Australia's opposition ties Pacific climate to security

<http://www.radioaustralia.net.au/news/stories/s1987423.htm>

### **Item 3. EC Proposal for Water Pricing**

The European Commission released a green paper proposing a water framework directive to deal with possible future water scarcity and assure sustainable water use in Europe. Feedback on specific proposals for pricing water on the “user pays” principle is expected from both the European Council and the Parliament. The EC warns that water shortage and drought might become the norm in Europe by 2070.

#### **Military Implications:**

The military should forecast water-pricing impacts on all its operations in Europe.

#### **Source:**

Commission opens debate on EU water scarcity

<http://www.theparliament.com/EN/News/200707/58fe829f-2224-462f-a5bc-81eadd80e13e.htm>

Water scarcity and droughts in Europe: Commission addresses key challenge

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1121&format=HTML&aged=0&language=EN&guiLanguage=en>

Water policy in the European Union

[http://ec.europa.eu/environment/water/quantity/scarcity\\_en.htm](http://ec.europa.eu/environment/water/quantity/scarcity_en.htm)

### **Item 4. EU Preparing New Directives on Waste Management and Water Quality**

The EU Environment Council reached political agreement on revising the EU's waste legislation—combining three existing laws: the Waste Framework Directive, the Hazardous Waste Directive, and the Waste Oils Directive into a more clear but comprehensive new Directive—and on managing water quality by improving standards and control systems and limiting pollution from hazardous substances.

**Military Implications:**

Although it is not clear when the new directives will be put forward for adoption, relevant military personnel should study the suggestions, follow its developments, and identify what changes in waste management and water-pollution practices might be required.

**Source:**

Environment: Commission welcomes Council agreements

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/970&format=HTML&aged=0&language=EN&guiLanguage=en>

**Item 5. Technological Breakthroughs with Environmental Security Implications****5.1 Polymer Dielectric Promises Higher Energy Storage**

North Carolina State Univ. physicist Vivek Ranjan and colleagues have discovered that combining the polymer polyvinylidene fluoride (PVDF) with chlorotrifluoroethylene (CTFE)— another polymer— produces a dielectric material that may allow capacitors to store up to seven times more energy than those currently in use.

**Military Implications:**

The military should follow this development to assess its possible use in power supplies for portable environmental scanning equipment and other high-density energy storage needs in lieu of batteries.

**Source:**

Unique Material May Allow Capacitors to Store More Energy

<http://news.ncsu.edu/releases/2007/July/123.html>

**5.2 Synthetic Biology to Combat Harmful 'Biofilms'**

A team of researchers from MIT and Boston University has genetically engineered an E. coli bacteriophage to produce an enzyme that degrades the biofilm that the bacterium often produces and which interferes with the action of the phage. The researchers applied this technique to E. coli biofilms, (producing a hundred-fold phage performance improvement) but they believe that their approach can be used with many other bacteria. For example, it might be possible for a modified anthrax bacteriophage to be sprayed on an area affected by anthrax, and then wiped off.

**Military Implications:**

This synthetic biology achievement opens possibilities for neutralizing the effect of some new biological weapons. Relevant military personnel should follow the development for its potential sanitizing effects and potential for deployment in fire extinguishers-like devices for rapid use.

**Sources:**

Team builds viruses to combat harmful 'biofilms'

<http://www.physorg.com/news102951008.html>

**5.3 Nano-based Solar Cell Material Offers Inexpensive Alternative**

Scientists at New Jersey Institute of Technology's Department of Chemistry and Environmental Sciences have developed an inexpensive polymer solar cell material that can be painted or printed

on flexible plastic sheets. The material uses a carbon nanotube complex combined with buckyball fullerenes, and offers a cost advantage over purified silicon. [See also *Biologically Based Dyes Dramatically Lower Solar Cell Costs* in April 2007 and *Photonic Crystal Provides 50% Cost Reduction in March 2007* environmental security reports.]

**Military Implications:**

The military should investigate this research for applications from roofing to portable systems.

**Source:**

NJIT Researchers Develop Inexpensive, Easy Process To Produce Solar Panels

[http://www.njit.edu/publicinfo/press\\_releases/release\\_1040.php](http://www.njit.edu/publicinfo/press_releases/release_1040.php)

#### **5.4 Tiny Cantilevers Detect Contaminants**

Prof. Anja Boisen and colleagues at the Department of Micro- and Nanotechnology, Technical University of Denmark, have created a detection device for contaminants, based on the change in resistance of a cantilever, 40×200 microns in size, when a contaminant molecule or bacterium binds to its antibody-coated surface and bends it. A variation works by using a similar element as the lid of a pigment-containing box, so when the strip bends, it releases a detectable color.

**Military Implications:**

The military should follow this development to see if it has possible uses in environmental and force health protection monitoring systems.

**Source:**

Using Nanotechnology to Detect Contaminants in Food and Water

News story: <http://www.azonano.com/news.asp?newsID=4535>

Rapid molecular detection of food- and water-borne diseases

[http://www.sgm.ac.uk/pubs/micro\\_today/pdf/080703.pdf](http://www.sgm.ac.uk/pubs/micro_today/pdf/080703.pdf)

#### **5.5 Magnetic Resonance Provides Short-range Power Source**

Marin Soljacic of the Massachusetts Institute of Technology has developed a technique for transmitting electric power at usable efficiency over distances of a few meters, using tailored oscillating electric and magnetic fields. Dr. Zhong Lin Wang and colleagues at the Georgia Institute of Technology have succeeded in using nanotechnology to produce an electric generator that can be embedded in the human body and may have the potential, when fully developed, of producing usable amounts of power from such mechanical sources as the pulsation of the arterial system. The combination offers locally produced, locally consumed, and environmentally friendly electricity.

**Military Implications:**

The military should follow these developments as they proceed toward practical implementation. The wireless transmission has possible applications in power systems for environmental devices, for example, by providing a single central source for multiple units, eliminating the need for heavy and bulky batteries, or power cords. The body-embedded generator could power individual environment sensors, drug dosers and prosthetic devices.

**Source:**

Cutting the last cord could resonate with our increasingly gadget-dependent lives

<http://www.sciencenews.org/articles/20070721/bob8.asp>



Nanogenerator Could Draw Energy from Human Blood

<http://news.softpedia.com/news/Nanogenerator-Could-Draw-Energy-from-Human-Blood-60580.shtml>

## **Item 6. New Software with Environmental Security Implications**

### **6.1 NASA-Developed Model to Help Reduce Famine**

Researchers from NASA's Goddard Space Flight Center have developed a computer model to anticipate food shortages brought on by drought, combining data from satellite remote sensing of crop growth, and food prices.

#### **Military Implications:**

The military should consider using the NASA-developed model in combination with other conflict-triggering factors for forecasting and eventually preventing conflicts.

#### **Source:**

NASA Researchers Find Satellite Data Can Warn of Famine

[http://www.nasa.gov/lb/centers/goddard/news/topstory/2007/famine\\_data.html](http://www.nasa.gov/lb/centers/goddard/news/topstory/2007/famine_data.html)

### **6.2 Software Package Monitors Buildings' Power**

The Sun Flow Monitor System software package marketed by Live Data Systems, Inc., Branchburg NJ, monitors a building's power sources, conventional or alternative, and its building management systems. This new software produces reports, which can aid in minimizing the structure's environmental demand.

#### **Military Implications:**

The military should investigate to determine if this software is more effective than currently used software in reducing the environmental footprint of existing or new military installations.

#### **Source:**

New Software Helps Gauge Buildings' Energy Use, Emissions

News story: [http://www.greenbiz.com/news/news\\_third.cfm?NewsID=35457](http://www.greenbiz.com/news/news_third.cfm?NewsID=35457)

Company site: <http://s205030653.onlinehome.us/>

## **Item 7. Updates on Previously Identified Issues**

### **7.1 OSCE Parliamentary Assembly Agrees to Advance Work on Environmental Security Strategy**

Further to last month's item on the OSCE Environmental Security Strategy: the OSCE Parliamentary Assembly passed the resolution to support efforts of OSCE's 56 participating States and 11 Partners "to tackle environmental security threats and thus to promote stability;" to continue work, "to develop an Environmental Security Strategy for the Organization to be debated at the OSCE Ministerial Council in November in Madrid;" to recommend that "the OSCE works closely together with OSCE participating states as well as national and other international organizations experienced in the field of environmental security; and "Calls upon OSCE participating countries to develop their own environmental security strategies."



**Military Implications:**

[Similar to previous articles on the same issue] The militaries of OSCE countries are likely to be invited to comment on the draft strategy. This is an opportunity for the U.S. Army's Strategy on the Environment to be used as a discussion document in this process. Russia and the CIS (Commonwealth of Independent States) were among the first to have a definition of environmental security; hence, military collaboration should be fruitful. If not already done, relevant military personnel should contact the Office of the Coordinator of OSCE Economic and Environmental Activities and the Environment and Security (ENVSEC) Initiative to collaborate on further development of the environmental security strategy and its implementation.

**Source:**

Kyiv Declaration of the OSCE Parliamentary Assembly and Resolutions Adopted at the Sixteenth Annual Session; Kyiv, 5 to 9 July 2007

<http://www.oscepa.dk/admin/getbinary.asp?FileID=1733>

Resolution on Environmental Security Strategy (text in the [Appendix](#))

<http://www.oscepa.dk/admin/getbinary.asp?FileID=1733>

Annual Sessions & Declarations

<http://www.oscepa.dk/index.aspx?articleid=+376+376>

**7.2 EC's WEEE Directive Goes into Effect in UK in July 2007**

The European Commission's Waste Electrical and Electronic Equipment (WEEE) Directive entered into effect in the United Kingdom on July 1, 2007, after having been effective in the rest of Europe since August 2005. The WEEE Directive is a framework concerning electrical and electronic appliances disposal in order to minimize impacts of this kind of waste on the environment. Among other stipulations, the directive requires that all such devices manufactured in the EU bear a label requiring mandatory recycling. [See also *E-waste Management Directive Came into Effect on August 13, 2005* in August 2005 environmental security report]

**Military Implications:**

Military stationed in EU Member States should comply with the directive and make sure that sound e-waste disposal practices are adopted, as appropriate under Status of Forces Agreements.

**Sources:**

New obligations for end-of-life IT equipment

<http://www.business4brunch.com/content/view/207/25/>

The IT Chief's Guide to WEEE

[http://greenercomputing.com/reviews\\_third.cfm?NewsID=35442](http://greenercomputing.com/reviews_third.cfm?NewsID=35442)

**7.3 EU Waste Shipment Legislation Came into Force in July 2007**

The EU legislation on transboundary shipments of waste adopted in 2006 came into effect July 12, 2007. The regulation establishes a legal framework to ensure that waste is properly handled from the time it is shipped to the time it is disposed of or recovered at destination, and bans the export and/or disposal of hazardous waste to certain countries. The new law replaces the 1993 waste shipment regulation, stipulating a more clear and simplified framework, as well as more severe enforcement measures. [See also *EU to Increase Environmental Regulations Enforcement* in October 2006, *Toxic Waste Disposal of Global Growing Concern* in September 2006, and other related items in previous environmental security reports.]

**Military Implications:**

The regulation on transboundary shipments of waste doesn't seem to have exceptions for the military; hence, relevant military personnel should comply with the new regulation, as appropriate under Status of Forces Agreements.

**Sources:**

Environment: new EU waste shipment legislation comes into force today

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1078&format=HTML&aged=0&language=EN&guiLanguage=en>

Regulation (EC) No 1013/2006 of the European Parliament and of the Council

[http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l\\_190/l\\_19020060712en00010098.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_190/l_19020060712en00010098.pdf)

Waste shipments

<http://ec.europa.eu/environment/waste/shipments/legis.htm>

**7.4 Arctic Access, Territorial Claims, Energy Resources and Environmental Management**

Global warming is expected to increase access to the Northwest Passage and other Arctic areas. Canada announced the construction of up to eight Polar Class 5 Arctic Offshore Patrol Ships and the establishment of a deep-water port in the far North. A Canadian opposition party and some Canadian analysts say Canada should do much more to assure its sovereignty over the area. The status of some Canadian Arctic waters is not clear among the relevant neighboring countries with varying territorial claims in the Arctic. Russia planted its flag on the seabed 4.2 km below the North Pole to strengthen its claims over a large Arctic area. [See also *The Disputes over the Northern Territories Set to Continue* in June 2007, *New Canadian Strategies for Monitoring the Northwest Passage* in August 2006, and *Arctic Northern Passage Opens New International Issues of Regulation* in February 2006 environmental security reports.]

**Military Implications:**

[Similar to previous articles on the same issue] It is likely that discussions for clear international regulations concerning the Arctic region will increase rapidly, opening the potential for new military roles in the region to ensure the safety of individuals and ecosystems. Relevant military personnel should cooperate with their counterparts in other countries and international organizations in developing timely, adequate national and international regulations and enforcement procedures regarding the Arctic.

**Source:**

Ottawa buying up to 8 Arctic patrol ships

<http://www.cbc.ca/canada/story/2007/07/09/arctic-cda.html>

Arctic patrol ship purchase met with skepticism

<http://www.cbc.ca/canada/north/story/2007/07/10/north-shipreax.html>

The Coming Conflict in the Arctic. Russia and the United States to Square off over Arctic Energy Reserves

<http://www.russiaprofile.org/page.php?pageid=International&articleid=a1184076124>

Russia plants flag under N Pole

<http://news.bbc.co.uk/2/hi/europe/6927395.stm>

### **7.5 Accelerating Synthetic Biology Applications Need Better Monitoring and Regulation**

Recently, there were some significant synthetic biology advances, such as the Genome transplant by the J. Craig Venter Institute (transforming one type of bacterium into another by transplanting of donor chromosome into the host), and MIT and Boston University built viruses to combat harmful 'biofilms' (see item 5.2 above). These developments increased the discourse around security issues related to synthetic biology, thus intensifying the regulations debate. International treaties such as the Convention on Biological Diversity might need to be revised in view of the new synthetic biology field. Along the same line, the International Consortium for Polynucleotide Synthesis appeals for improved regulation and surveillance of DNA synthesis products. They propose an oversight framework to improve biosecurity in the gene-synthesis sector, to prevent ill-intentioned individuals from accessing and using such materials. [See also *Futuristic Nanotech and Synthetic Bioweapons Regulation* in November 2006 and *ETC Report Warns of the Threat of Synthetic Biology and Calls for Global Regulations* in January 2007 environmental security reports.]

#### **Military Implications:**

In addition to biosafety issues, synthetic biology opens possibilities for new weapons. If not already in process, military forecasters of such weapons should meet with diplomats to establish an agenda to begin the process of creating treaties to better control such futuristic weapons and weapons systems and the effects of their residuals. Because ICT and nano-engineering are continuing to accelerate the pace of synthetic biology, the sooner such international negotiations are begun, the better.

**Sources** (a more expended list available in the [Appendix](#)):

First Bacterial Genome Transplantation Changes One Species To Another

<http://www.sciencedaily.com/releases/2007/06/070628232413.htm>

Scientists Build Bacteria-Killing Organisms From Scratch

<http://blog.wired.com/wiredscience/2007/07/designer-virus-.html>

Government Oversight Sought for Gene Synthesis

[http://www.nti.org/d\\_newswire/issues/2007\\_7\\_23.html#6805AC84](http://www.nti.org/d_newswire/issues/2007_7_23.html#6805AC84)

### **7.6 IAEA to Improve Nuclear Security in 35 Countries**

The EU contributed €7 million to IAEA's Nuclear Security Fund to improve nuclear security in 35 countries, including 27 in Africa. The focus will be to secure radioactive materials and sites at risk of sabotage and improve capabilities to detect and respond to illicit trafficking in some African countries, including Ghana, South Africa, Morocco, Nigeria, Sudan, Tanzania, Uganda and Zambia. The program will also work to strengthen national legislation and regulatory infrastructures related to nuclear and radioactive material in—among other countries—Azerbaijan, Cape Verde, Comoros, Croatia, Swaziland, and the Former Yugoslavia Republic of Macedonia. Despite the latest contribution, “IAEA's nuclear security programme remained 90 per cent funded through unpredictable and heavily conditioned voluntary contributions,” notes IAEA Director General Mohamed ElBaradei.

#### **Military Implications:**

Military personnel with nuclear security responsibility might consider offering collaboration and know-how support for the new IAEA nuclear safety programs.

**Source:**

Nuclear Security in Africa Gets €7 Million Boost

<http://www.iaea.org/NewsCenter/News/2007/nucalsecafrica.html>

**7.7 Climate Change Research****7.7.1 Melting Glaciers**

Ice caps and glaciers contribute 60% of the ice melting that is one cause of increasing sea levels. According to scientists from the University of Colorado-Boulder's Institute of Arctic and Alpine Research, INSTAAR, and the Russian Academy of Sciences, the rate has been accelerating over the past decade and 28% of this comes from Greenland, and 12% from Antarctica.

In the Andes, many of the lower glaciers might be gone over the next decade or so, raising concerns over water and power supplies, and thus affecting economic development and the fight against poverty in the region—mainly in Peru.

Scientists observing the modifications in Greenland are also warning of fast paced melting and increasing temperatures in the region. Arctic climatologist Konrad Steffen who spent the past 18 springs on the Greenland ice cap, noted that over the last decade, the average winter temperature rose by 7°F, and cracks and ice quakes are more frequent, as if Greenland is “coming apart.” The Greenland Climate Network established by Steffen serves climate scientists worldwide and is one of the main instruments used by scientists from 60 nations participating in interdisciplinary research focusing on the Polar Regions, during the International Polar Year.

The Chinese Academy of Sciences reports that the Qinghai-Tibetan plateau is warming at 0.7°F a decade, and that the 18,000 square mile area covered by glaciers has shrunk by 30% over the past decades, threatening to dry up the Yellow River and thus causing more droughts, sandstorms and desertification. The Chinese government already had to relocate some of the local population.

**7.7.2 Rising Sea Level**

During the recent meeting at the UN Open-ended Informal Consultation Process on Oceans and the Law of the Sea, Indonesia said it has lost 26 islands to climate change.

A team of scientists from the University of Colorado-Boulder's Institute of Arctic and Alpine Research, INSTAAR, and the Russian Academy of Sciences estimates that by 2100 accelerating melt of glaciers and ice caps could cause 0.1–0.25m (4–9.5 inches) additional sea level rise. This rise might be doubled if the expansion of ocean water warming is factored in.

**Military Implications:**

[Similar to previous articles on the same issue] Increasingly more compelling evidence and warnings on climate change amplify international discourse and increase the emergence of international policies trying to tackle the causes and develop strategies to mitigate climate change effects. Flooding of littoral zones and desertification are likely to stimulate socio-economic instability and environmental refugee movements - both enhancing physical conflict potential in many parts of the globe.

**Sources:** (a more expanded list in the [Appendix](#))

Glaciers Dominate Eustatic Sea-Level Rise in the 21st Century

<http://www.sciencemag.org/cgi/content/abstract/1143906> (abstract; full text by subscription only)

Glacial melting poses potentially costly problems for Peru and Bolivia

[http://www.economist.com/world/la/displaystory.cfm?story\\_id=9481517](http://www.economist.com/world/la/displaystory.cfm?story_id=9481517)

Konrad Steffen: The Global Warming Prophet

<http://www.popsoci.com/popsoci/environment/6661e3568cc83110vgnvcm1000004eecbccdrerd.html>

Warming of glaciers threatens millions in China

<http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/08/01/MN2VRAKIH2.DTL>

States Reach Partial Agreement on Marine Genetic Resources at UN Talks

<http://www.newsletterarchive.org/2007/06/30/180929-STATES+REACH+PARTIAL+AGREEMENT+ON+MARINE+GENETIC+RESOURCES+AT+UN+TALKS>

### **7.8 North American Trilateral Agreement for Energy Security and the Environment**

Energy ministers for Canada, Mexico and the U.S. endorsed the first trilateral agreement on energy science and technology—a framework designed to enhance North American energy security and environmental protection. It focuses on cooperation in energy science and technology to increase energy efficiency and advance clean energy technologies across North America and the world. Energy security will also be high on the agenda of the North American Leaders' Summit to be held August 20-21 in Montebello, Quebec.

#### **Military implications:**

Military personnel with responsibilities for advanced energy efficiencies with reduced environmental impacts should seek opportunities for collaboration within this agreement.

#### **Source:**

North American Energy Ministers Take Further Action on Energy Security and the Environment  
[http://www.nrcan.gc.ca/media/newsreleases/2007/200766\\_e.htm](http://www.nrcan.gc.ca/media/newsreleases/2007/200766_e.htm)

### **7.9 Nanotechnology Safety Issues (NST)**

Some noteworthy nanotech-related events include:

The European Commission (EC) invites comments on the proposed Recommendation on a Code of Conduct for Responsible Nanosciences and Nanotechnologies Research. The Commission intends to collect views on the safe development of NST from a broad audience, ranging from research, industry, civil society, policy and media, and the general public.

The UK's Royal Society and a group of other organizations have begun an initiative to develop a "Responsible NanoCode" for businesses working with nanotechnologies. According to Nanowerk, "The aim of the Code will be to establish a set of internationally relevant principles which outline good practice for businesses involved in all aspects of these emerging technologies and their applications including research, development, manufacturing, distribution and retailing." The code will be developed by a working group of representatives from a variety of stakeholders.

A U.S. Congressional bill 'To ensure the development and responsible stewardship of nanotechnology' was referred on July 31, 2007 to the Committee on Science and Technology, and in addition to the Committees on Ways and Means, Energy and Commerce, and Homeland Security.

A "Pollution Prevention through Nanotechnology" conference will be held September 25-26, 2007, in Arlington, VA. The forum is organized by EPA to improve understanding of nanotechnology and to "encourage responsible development of nanotechnology that prevents pollution."

**Military Implications:**

Military liaisons with the EC might request results of the public inputs on a Code of Conduct for Responsible Nanosciences and Nanotechnologies Research for potential applications on its own research, as well as contributing their own insights on nanotech issues to the EC.

Military representatives in the UK should consider participating in the working group <[www.responsiblenanocode.org](http://www.responsiblenanocode.org)> in order both to provide input to its deliberations and to acquire information on other organizations' experience with such questions as nanotech environmental risk assessment.

**Source:**

Entry point to the survey (managed via Sinapse(r) communication system)

[http://ec.europa.eu/sinapse/sinapse/index.cfm?fuseaction=login.guestform&redirect=cmtypubdischome.home&CMTY\\_ID=4E10DF9B-C446-4B22-214E55DE322F72D9&cmt\\_disc\\_id=9C2891B3-D043-41F9-2DD3F3E6174CBA7A&request=1](http://ec.europa.eu/sinapse/sinapse/index.cfm?fuseaction=login.guestform&redirect=cmtypubdischome.home&CMTY_ID=4E10DF9B-C446-4B22-214E55DE322F72D9&cmt_disc_id=9C2891B3-D043-41F9-2DD3F3E6174CBA7A&request=1)

Responsible nanotechnology code for business to be developed

<http://www.nanowerk.com/news/newsid=2252.php>

H.R.3235. Title: To ensure the development and responsible stewardship of nanotechnology.

<http://thomas.loc.gov/cgi-bin/bdquery/z?d110:HR03235:@@@T>

Pollution Prevention through Nanotechnology Conference: September 25-26, 2007

<http://www.epa.gov/oppt/nano/nano-confinfo.htm>

**Item 8. Reports Suggested for Review****8.1 Global Trends in Sustainable Energy Investment 2007**

*Global Trends in Sustainable Energy Investment 2007— Analysis of Trends and Issues in the Financing of Renewable Energy and Energy Efficiency in OECD and Developing Countries* is a report by UNEP Sustainable Energy Finance Initiative and New Energy Finance organization. It is an overview of the financial aspect of the current status of sustainable energy development, with regional and sectoral trends. The analysis is intended for stakeholders and policy makers with involvement in sustainable energy.

**Military Implications:**

Military personnel with sustainable energy decision responsibility should review the report for potential inputs to their own R&D programs.

**Source:**

*Global Trends in Sustainable Energy Investment 2007— Analysis of Trends and Issues in the Financing of Renewable Energy and Energy Efficiency in OECD and Developing Countries*

[http://www.unep.org/pdf/SEFI\\_report-GlobalTrendsInSustainableEnergyInverstment07.pdf](http://www.unep.org/pdf/SEFI_report-GlobalTrendsInSustainableEnergyInverstment07.pdf)

**8.2 Renewable Energy Projects May Face New Scrutiny**

According to a paper published in Inderscience's *International Journal of Nuclear Governance, Economy and Ecology*, some renewable energy sources might not be so green and might even be damaging to the environment. The paper's author, Jesse Ausubel, Director of the Rockefeller University's Program for the Human Environment in New York, focuses primarily on land use



efficiency of the various alternatives (e.g. wind, biomass, hydro), and points to nuclear as the best choice from the standpoint of minimizing environmental footprint.

**Military Implications:**

Criticism of some renewable energy technologies is increasing. Military representatives involved in international environmental discussions should review these arguments and be prepared to present an informed military viewpoint on them. It will be essential to be wary of special interests on all sides of this debate arguing with partial truths, since competition for projects will likely underlie many agendas.

**Source:**

Renewable energy wrecks environment, scientist claims

[http://www.world-science.net/othernews/070724\\_renewable.htm](http://www.world-science.net/othernews/070724_renewable.htm)



## APPENDIX

### Reference Details

This Appendix contains expanded background information on some items.

### Item 7. Updates on Previously Identified Issues

#### 7.1 OSCE Parliamentary Assembly Agrees to Advance Work on Environmental Security Strategy

**Kyiv Declaration of the OSCE Parliamentary Assembly and Resolutions Adopted at the Sixteenth Annual Session**

**Kyiv, 5 to 9 July 2007**

<http://www.oscepa.dk/admin/getbinary.asp?FileID=1733>

#### **RESOLUTION ON ENVIRONMENTAL SECURITY STRATEGY**

1. Underlining the importance environment-related issues can have as part of the global security,
2. Noting the fact that environmental co-operation can be an effective catalyst for reducing tensions, broadening co-operation and promoting peace,
3. Welcoming the discussions and decisions taken by the Economic and Environmental Forum of the Organization for Security and Co-operation in Europe, held in May 2007 in Prague,
4. Recalling the efforts and experiences OSCE participating States as well as other international organizations have already undertaken in fostering environmental security,

The OSCE Parliamentary Assembly:

5. Welcomes every constructive effort the OSCE undertakes to help its 56 participating States and 11 Partners for Co-operation to tackle environmental security threats and thus to promote stability;
6. Encourages the ongoing work of the OSCE to develop an Environmental Security Strategy for the Organization to be debated at the OSCE Ministerial Council in November in Madrid;
7. Recommends that the OSCE works closely together with OSCE participating States as well as national and other international organizations experienced in the field of environmental security;
8. Calls upon OSCE participating States to develop their own environmental security strategies.

## 7.5 Accelerating Synthetic Biology Applications Need Better Monitoring and Regulation

**Sources** (a more expended list):

Synthetic Biology 3.0

<http://www.innovationwatch.com/choiceisyours/choiceisyours-2007-07-15.htm>

First Bacterial Genome Transplantation Changes One Species To Another

<http://www.sciencedaily.com/releases/2007/06/070628232413.htm>

Genome Transplantation in Bacteria: Changing One Species to Another

<http://www.sciencemag.org/cgi/content/abstract/1144622>

Scientists Build Bacteria-Killing Organisms From Scratch

<http://blog.wired.com/wiredscience/2007/07/designer-virus-.html>

NBICS and the Convention on Biological diversity (CBD)

<http://politicsofhealth.org/wol/2007-06-30.htm>

Government Oversight Sought for Gene Synthesis

[http://www.nti.org/d\\_newswire/issues/2007\\_7\\_23.html#6805AC84](http://www.nti.org/d_newswire/issues/2007_7_23.html#6805AC84)

DNA synthesis and biological security

<http://www.nature.com/nbt/journal/v25/n6/abs/nbt0607-627.html;jsessionid=A7690C7549ADA0D4A2EC6D17EA7BCE2D> (by subscription only)

## 7.7 Climate Change Research

**Sources:** (a more expended list)

Glaciers Dominate Eustatic Sea-Level Rise in the 21st Century

<http://www.sciencemag.org/cgi/content/abstract/1143906> (abstract; full text by subscription only)

<http://www.sciencemag.org/cgi/content/full/1143906/DC1> (supporting online material)

Glaciers and Ice Caps Quickly Melting Into the Seas

<http://www.ens-newswire.com/ens/jul2007/2007-07-20-03.asp>

Glacial melting poses potentially costly problems for Peru and Bolivia

[http://www.economist.com/world/la/displaystory.cfm?story\\_id=9481517](http://www.economist.com/world/la/displaystory.cfm?story_id=9481517)

Konrad Steffen: The Global Warming Prophet

<http://www.popsci.com/popsci/environment/6661e3568cc83110vgnvcm1000004eecbccdrerd.html>

Warming of glaciers threatens millions in China

<http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/08/01/MN2VRAKIH2.DTL>

United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea

[http://www.un.org/Depts/los/consultative\\_process/consultative\\_process.htm](http://www.un.org/Depts/los/consultative_process/consultative_process.htm)

States Reach Partial Agreement on Marine Genetic Resources at UN Talks

<http://www.un.org/apps/news/story.asp?NewsID=23102&Cr=law&Cr1=sea>

Asia-Pacific Examines Ways to Scale Up Responses to Climate Change

<http://www.unescap.org/unis/press/2007/jul/g29.asp>